

PUBLIC VIEWS AND PREFERENCES ABOUT CONSENT-BASED SITING IN THE UNITED STATES

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A prerequisite to implementing a consent-based approach is to understand public awareness about current radioactive waste management practices and preferences for future management options. The Center for Energy, Security & Society has tracked the evolution of public dialogue on nuclear energy and the management of the resulting spent nuclear fuel and high-level radioactive waste through national annual surveys since 2006. Surveys in 2014, 2015, and 2016 included questions regarding how survey respondents understand and evaluate consent in the context of the storage and disposal of spent nuclear fuel. When asked, who should have a veto in a siting decision, respondents were most likely to name citizens living within 50 miles of the proposed facility, a state's department of environmental quality, a majority of voters in the state, US Nuclear Regulatory Commission, and US Environmental Protection Agency. With regards to withdrawing consent, the public believes that a host community should be able to withdraw its consent up to the license submission phase. Most respondents agreed that consent should not be withdrawn after construction has begun. Survey results also suggest that not all mechanisms of public engagement are equally attractive. Attending informational meetings, expressing their opinions on social media, and writing to their elected representatives are the most likely means of engagement. Regarding institutional trust, the survey found that the National Academy of Sciences, university scientists, and local emergency responders are the most trusted entities to provide technical information about nuclear waste risks and benefits.

I. INTRODUCTION

In 2012, the President's Blue Ribbon Commission on America's Nuclear Future (BRC) stressed the importance of public engagement and open communication as "core missions of a revitalized waste management program."¹ According to the BRC, better communication and effective engagement with different constituencies can help build public trust in the government and increase legitimacy of the siting process. While the BRC recommended an adaptive, staged, and consent-based process, it also stressed that a successful consent-based process would likely require extended negotiations between the implementing organization and potentially affected entities like local, tribal, and state governments.¹

Based in part on these recommendations, in December 2015, the US Department of Energy (DOE) launched a nationwide consent-based siting initiative, beginning with

an Invitation for Public Comment in the Federal Register to solicit input on key considerations about the design of a fair and effective siting process. As part of this initiative, the DOE organized a series of public and stakeholder meetings designed to gather comments about the design of a consent-based siting process. Key questions raised regarding the design of the siting process include: Who should have the authority to block or veto a siting decision? When can consent be withdrawn during the process? Who is likely to engage in the siting process, and how? Who should lead and facilitate the siting process?

The Center for Energy, Security, & Society has undertaken an annual series of nationwide surveys since 2006 to measure public understanding and preferences for facility design and siting. Initially both phone and internet surveys were conducted; however, surveys in later years have focused on using a web-based questionnaire. The Internet sample closely approximates characteristics of the adult US population (18 years and older). Furthermore, responses are weighted to match the US demographics, as estimated by the Census Bureau for the year of the survey, when analyzing data.²

These surveys include questions about the consent-based siting process, geared towards measuring public views on the design of a consent-based siting process and answers to the key questions listed above. This summary report discusses these preferences.

II. CONSENT & VETO AUTHORITY

Siting nuclear waste facilities involves a variety of different actors, including government agencies, elected officials, state and tribal governments, industry representatives, non-governmental organizations, and local citizens. Determining which actors should play a role in the siting process is a key component of any consent-based policy.² The 2015 iteration of the Energy and Environment survey series (EE15) included questions designed to provide information on public preferences regarding which of these stakeholders should hold "veto authority" - or the ability to stop the siting process.³ Findings from the survey are discussed below.

To elicit views about veto authority, respondents were first asked to assume that "a small community that is about 50 miles from your primary residence ... has volunteered to be considered for hosting an interim storage facility for spent nuclear fuel." They were then presented with a randomly ordered list of stakeholders (as shown in Fig. 1 below) and asked:

Please select all those on the following list that you think should be allowed to block or veto the construction of a proposed interim storage facility for used nuclear fuel in [respondent's state]

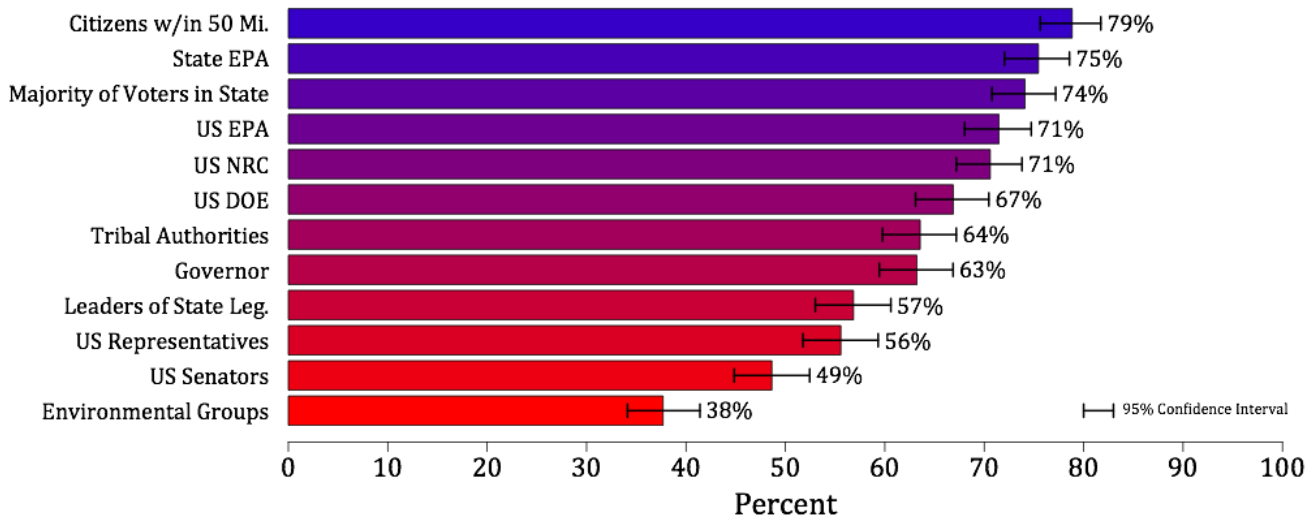


Fig. 1. Public preferences about veto authority for a consent-based siting process in 2015 national survey.

Fig. 1 shows the percentage of respondents who preferred to give each actor or stakeholder a veto in the siting process. The gradient from red to blue represents actors that were least preferred to be accorded a veto (in bright red) to those most preferred to be accorded veto authority (in deep blue). The actors chosen most often to have a veto include citizen groups and key federal and state regulatory agencies. 79% of respondents thought that a majority of citizens living within 50 miles of the proposed site, including Native American communities, should have the ability to veto the siting process. 73% of the respondents accorded the same authority to a majority of voters in the host state.

Regarding key regulatory agencies, 75% of respondents said that the state Environmental Protection Agency (EPA) or its equivalent from the host state should have veto authority. The US Nuclear Regulatory Commission (NRC) and the US EPA (federal) also ranked at the top of the list (with 71% of respondents selecting them) of entities that should have the ability to block the siting process. Actors that were least likely to be chosen to have a veto include environmental groups (only 38% respondents viewed them as essential) and elected legislators including US Senators from the host state or US Representatives from that district (49% and 56% respectively). These findings suggest that members of the US public place greatest weight on having local citizens and regulatory agencies have a “seat at the table” when consenting to site a spent nuclear fuel (SNF) storage or disposal facility.

III. WITHDRAWING CONSENT

Another important component of a consent-based policy is agreeing upon “exit ramps” that should be provided to the potential host community. Once consent has been granted by a community to participate in the siting process, at what points can that consent be withdrawn? To measure public opinion on this topic, the 2014 iteration of the EE survey series (EE14) provided respondents a description of five “stages” of the siting process, and then asked them if the local community should be allowed to withdraw consent for siting an interim storage facility at each of those stages.

The characterization of the five stages of the siting process provided to respondents is shown below:

- Step 1: The community or state volunteers to be a candidate to host an interim storage facility for used nuclear fuel, and a technical evaluation of the site is begun. This evaluation may take several years to complete.
- Step 2: Technical evaluation of the suitability of the site for interim storage of used nuclear fuel is completed.
- Step 3: If the site is determined to be suitable, a license to construct an interim storage facility for used nuclear fuel is submitted to US regulatory agencies; the regulatory consideration may take several years to complete.
- Step 4: If the license is provided, construction of an interim storage facility for used nuclear fuel begins. Construction will take several years to complete.
- Step 5: Construction is completed, and the interim storage facility is prepared to receive used nuclear fuel.

Fig. 2 shows the percentage of respondents who said a potential host community should be able to withdraw its consent to participate at each stage. The gradient from blue to red highlights the progression from stages where respondents thought the communities should be able to withdraw consent (shown in blue), to stages where they thought withdrawal of consent was no longer appropriate (shown in red). In stage 1, when a community or state volunteers to be a candidate and be considered for hosting a facility, an overwhelming majority of the respondents (79%) thought that the community should be able to withdraw consent. Stages 2 and 3, where technical evaluation of the proposed site is conducted and initial license is submitted if the site is deemed suitable, were also seen by large portions of respondents as legitimate opportunities for the community to reconsider and withdraw consent. Support for withdrawing consent dropped significantly during stages 4 and 5 (49% and 34%), when construction of the facility would begin and the facility would begin preparing to receive used nuclear fuel. These results indicate that members of the public make a clear distinction about when withdrawing consent is appropriate and when it is not; once a license is granted, and particularly after construction is completed, withdrawing consent is no longer seen as a reasonable option by a majority of respondents.

IV. PUBLIC ENGAGEMENT DURING THE SITING PROCESS

Both the design and implementation of a consent-based process requires public engagement. First, public feedback and input is crucial to design a consent-based process that is representative of beliefs and preferences. Second, successful implementation of a consent-based siting process is contingent upon public buy-in, perceived

legitimacy of the process, and effective communication with key actors in the process. It is often assumed, however, that when mechanisms of engagement are created, members of the public will use them to provide input. To test this assumption, respondents in the 2016 survey were asked about the likelihood that they would participate in the debate and policy process of siting a permanent disposal facility within 50 miles of their primary residence. The survey included seven different mechanisms of engagement, and respondents were asked to rate their likely engagement in each one, on a scale from one to seven, where one means *not at all likely* and seven means *extremely likely*. Fig. 3 presents mean values for likely engagement in each mechanism ranging from blue (indicating the mechanisms respondents were most likely to utilize) to red (indicating those least likely to be utilized). As shown, attending informational meetings about the siting process (mean score of 4.2), expressing their opinion about the process on social media platforms (3.9), and writing to their elected representatives about the facility siting (3.9) were chosen as the most likely means of engagement.

Interestingly, serving on a citizens' committee also received a similar feedback (mean score of 3.7), despite the time and effort that would be involved in serving on such a committee. This finding suggests that if given the opportunity (and adequately notified of the opportunity), a reasonable fraction of local residents would be willing to serve on citizens' committees. The least favored means of engagement included helping to organize opposition or support to the permanent disposal facility (mean scores of 3.3 and 3.0 respectively), and expressing views at a public hearing (3.1).

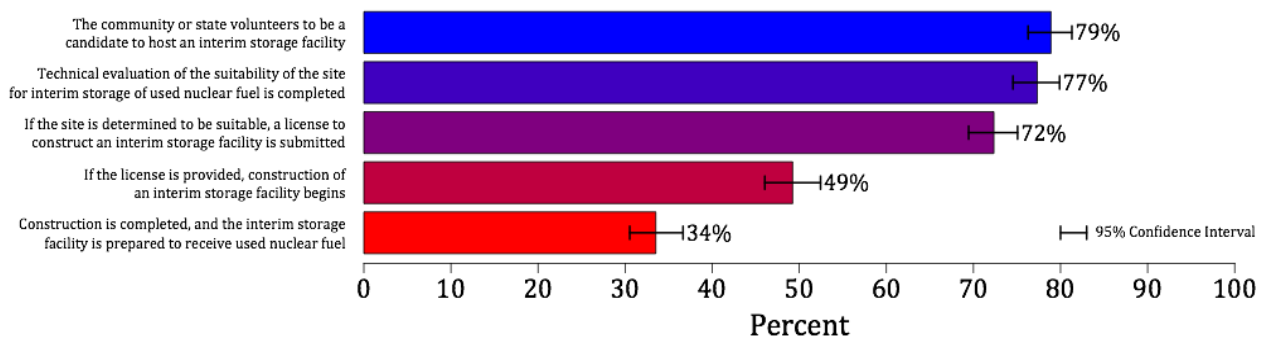


Fig. 2. Public preferences about withdrawing community consent in 2014 national survey.

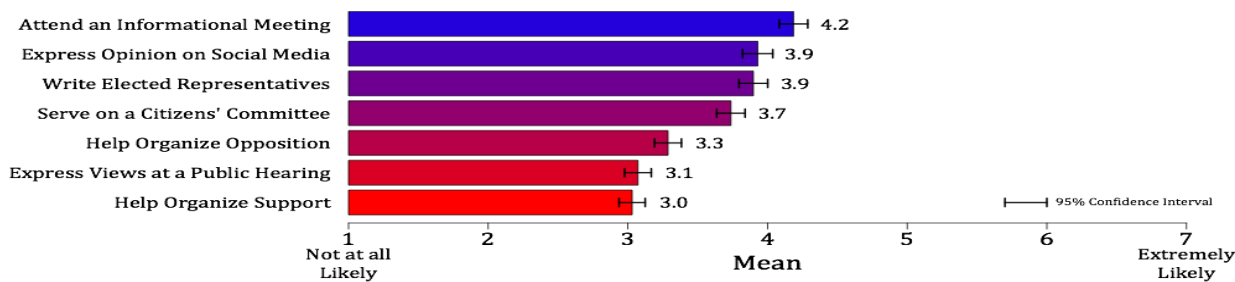


Fig. 3. Self-identified participation in a future siting process in 2016 national survey.

Overall, however, Fig. 3 indicates that regardless of the mechanism employed, people were only modestly likely to engage in the siting process. At best, the mean scores hovered around mid-scale, indicating that engagement is unlikely to be widespread and that the entity in charge will likely have to find creative ways to engage the general public to garner feedback. It is important to note that these results represent responses by a cross-section of residents to a hypothetical facility, and that residents of host communities living near an actual candidate site may be more (or less) engaged in the process.

V. TRUST IN KEY INSTITUTIONS TO LEAD AND FACILITATE THE CONSENT-BASED SITING PROCESS

In its 2012 report, the BRC described an erosion of trust in the federal government’s nuclear waste program, which might undermine the success of any future nuclear waste management strategy. The commission recommended establishing a new waste management organization that would be responsible for implementing the consent-based siting program.¹ A Senate bill (Nuclear Waste Administration Act of 2015) was introduced in the last Congress to establish such an organization.⁴ A primary goal of any new organization would be to lead and facilitate the consent-based process in a way that effectively engages key stakeholders and establishes norms of consensus that can be implemented in a fair and adaptive manner. Whether such a new organization would facilitate the restoration of trust and public support is a question that needs to be explored.

Would a new organization be more trustworthy and better able to lead and facilitate a consent-based siting process than existing entities such as the DOE, the National Academy of Sciences (NAS), or the EPA? Questions in the 2016 Energy and Environment Survey (EE16) survey were

designed to ask about public trust in four different organizations—NAS, DOE, EPA, and a new independent federal agency (here called “fedcorp”)—to lead and facilitate a consent-based process. For purposes of this question, Fedcorp was described as “A new independent agency of the federal government, with leadership appointed by the president with the advice and consent of the Senate, that is funded by fees from nuclear energy, and that is given responsibility for managing spent nuclear fuel from US nuclear power plants. It would be subject to a Federal Oversight Board.” The question wording is reproduced below:

The process of reaching consent by affected communities and states for siting permanent storage and disposal facilities for spent nuclear fuel will be complex and is likely to take many years to complete. On a scale from zero to ten, where zero means *no trust* and ten means *complete trust*, in your view, how much would you trust each of the following agencies to lead and facilitate that process? [agencies presented in randomized order]

Results shown in Fig. 4 suggest that on average, members of the public would trust the NAS the most (mean score of 6.4), which is modestly (although statistically significantly) higher than the level of trust for the EPA. The level of trust in the DOE (5.7) is lower than NAS and EPA, but is statistically greater than that for a new, independent agency formed to manage SNF disposition. These findings suggest that lay citizens are inclined to trust existing organizations more, at least initially, than they would a new independent agency. A new “Fedcorp” — like existing agencies — would need to persuade the public and stakeholders that it is capable of managing the process in a fair and effective manner.

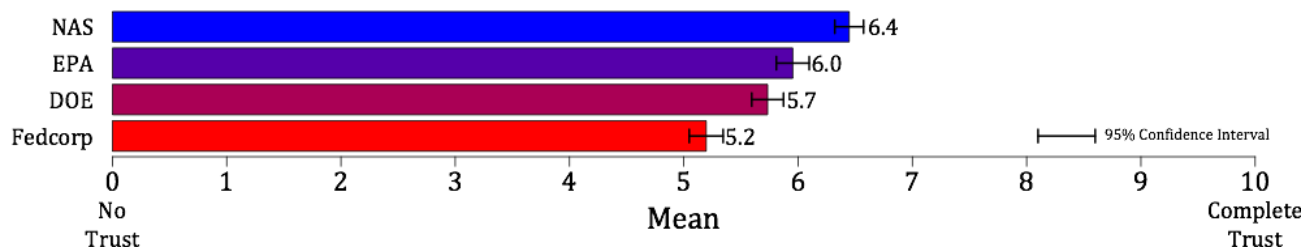


Fig. 4. Public trust in institutions potentially involved in a future siting process as recorded in 2016 national survey.

VI. SUMMARY AND IMPLICATIONS

Results from the EE survey series indicate that members of the public have clear preferences about the characteristics of a consent-based siting process for facilities to manage SNF. First, they believe that local citizens and key regulatory agencies should have veto authority in the siting process; there is only moderate support for giving veto authority to elected legislators, and even less for advocacy groups. Second, respondents indicated clear thresholds beyond which consent should not be withdrawn. An overwhelming majority of survey respondents indicated that host communities should be able to withdraw consent before a license has been granted; support for permitting withdrawal of consent fell considerably after a license has been approved and construction has begun.

Other components of the consent-based siting process appear to be less well defined in the public’s mind. Respondents from the EE survey series were, on average, only modestly likely to engage in a range of opportunities to participate in the siting process. The most likely mechanisms chosen include attending informational meetings and using social media. Finally, on average, while EE respondents expressed a modest preference for the NAS or EPA to lead and facilitate the consent-based siting process, no agency received overwhelming support or opposition. It is of interest that the DOE was (statistically significantly) more trusted to lead the siting process than was a proposed new independent federal agency. It is important to note that EE survey respondents represent a cross-section of the US population; a local population with different characteristics (e.g., one more actively involved in nuclear issues, or one near a prospective host site) may possess a different set of preferences about consent, institutional mechanisms, and

engagement in the siting process. Thus, the EE findings reported here indicate likely perspectives among the broader public at the starting point of the development of a consent-based siting process.

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